ART. 34 AMENDED CLAIMS 09/762210

Claims

1. Process for displaying the mean modulation error ratio MER_{RMS} of an orthogonal frequency division and multiplexing (OFDM) multicarrier signal, characterised in that

a) for each current modulation symbol I of each individual carrier k of the multicarrier signal, the square m_k of the error vector is calculated in accordance with the equation

$$m_k = |\text{error vector}_k|^2$$

b) this value m_k is set off against the contents of a memory location of a first memory (A2) associated with the same carrier k, which memory has as many memory locations as the OFDM signal has carriers, in accordance with the equation

$$A2_{k,1+1} = \frac{(A2_{k,1} \cdot 1 + m_k)}{(1+1)}$$

where

$A2_{k,1+1}$ is the new measured value (instant 1+1) which is to be stored in memory location k of the memory A2,

$A2_{k,1}$ is the previous measured value (instant 1) from memory location k of the memory A2,

m_k is the current measured error square for carrier k,

k is the carrier number within the OFDM spectrum, increases with the frequency, k = 0... K_{max},

l is the number of the symbol, increases with time, $0 \leq l$,

c) the mean modulation error MER_{RMS} is then calculated for each carrier from these values of the memory locations in accordance with the equation

$$MER_{RMS,k} = 100 \cdot \frac{\sqrt{A2_k}}{\overline{VM}} \quad [\%]$$

where $\overline{VM}$ is the square weighted mean value of the amplitudes of all ideal signal statuses of the type of modulation used in each case of a carrier modulated with user data, and

d) this MER_{RMS} value is then illustrated on a graph for each individual carrier k as ordinate value of a diagram with the number of carriers as abscissa.

2. Process according to claim 1, characterised in that for the purpose of displaying the maximum modulation error ratio MER_{MAX}, the value m_k calculated in accordance with calculation stage a) is compared with the value of a memory location of a second memory (A1) associated with the same carrier k, which memory has as many memory locations as the OFDM signal has carriers, the value stored in this memory location being replaced by the current value when the current value is greater than that already stored,

e) the maximum modulation error ratio MER_{MAX} is then calculated for each carrier from these maximum values of the memory locations in accordance with the equation

ART 34 AMDT

$$MER_{MAX,k} = 100 \cdot \frac{\sqrt{\overline{A1_k}}}{\overline{VM}} \ [\%]$$

wherein $\overline{VM}$ is the square weighted mean value of the amplitude of all ideal signal statuses of the modulation type used in each case of a carried modulated with user data, and

f) this MER-max value is then illustrated on a graph for each individual carrier k as ordinate value of a graph with the number of carriers as abscissa.

3. Process according to claim 1,
characterised in that
in process stage b) according to claim 1 an intermediate value is initially calculated in accordance with the equation

$$A2'_{k,1+1} = A2'_{k,1} + m_k$$

where

$A2'_{k,1+1}$ is the new measured value (instant 1+1) which is to be stored in memory location k of the memory A2,

$A2'_{k,1}$ is the previous measured value (instant 1) from memory location k of the memory A2,

m_k is the current measured error square for carrier k,

k is the carrier number within the OFDM spectrum, increases with the frequency, k = 0... K_{max},

ART 34 AMDT

1 is the number of the symbol, increases with time, $0 \leq 1$.

and this intermediate value A2' is divided prior to display according to process stage d) by the number of symbols detected which have been counted in a separate counter in accordance with the equation

$$A2_{k,1} = \frac{A2'_{k,1}}{1+1}$$

4. Process according to ~~one of the preceding claims,~~ Claim 1 characterised in that the values initially determined in percent for MER_{RMS} and/or MER_{MAX} are converted prior to their frequency-dependent graphic illustration into the unit dB in accordance with the equation

$$MER_{db} = -20.1g\left(\frac{MER[\%]}{100}\right) \qquad [dB].$$

ART 34 AMDT